

Listing of Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

1-20. (Canceled)

21. (Previously Presented) An apparatus for cleaning an irradiated nuclear fuel assembly, comprising:

an elongated housing having an opening at a first end and a length, wherein said opening is configured to receive, and said length is configured to be at least as long as, an irradiated nuclear fuel assembly to be received by said elongated housing; and

a plurality of ultrasonic omnidirectional transducers positioned on said housing, each comprising a rod configured to emanate omnidirectional ultrasonic energy waves.

22. (Previously Presented) The apparatus of claim 21, wherein said housing is configured to receive an irradiated nuclear fuel assembly comprising an array of cylindrical rods.

23. (Withdrawn) The apparatus of claim 21, wherein said housing comprises a bottom end and a base plate attached to said bottom end.

24. (Previously Presented) The apparatus of claim 21, wherein said plurality of ultrasonic transducers is positioned along the entire length of said housing.

25. (Previously Presented) The apparatus of claim 21, wherein said rod of each of said ultrasonic transducers comprises an elongated rod having a first end and a second end, wherein each of said ultrasonic transducers further comprises a first transducer at said first end and a second transducer at said second end, and wherein each of said elongated rods is positioned substantially parallel to the length of said housing.

26. (Previously Presented) The apparatus of claim 25, wherein said plurality of ultrasonic transducers is positioned along the entire length of said housing.

27. (Withdrawn) The apparatus of claim 21, wherein said housing comprises an elongated, rectangular structure having four sides and wherein said plurality of ultrasonic transducers is positioned on each of said four sides.

28. (Withdrawn) The apparatus of claim 27 wherein each of said ultrasonic transducers comprises an elongated rod having a first end and a second end; a first transducer at said first end; and a second transducer at said second end; and wherein each of said elongated rods is positioned substantially parallel to a direction of elongation of said elongated, rectangular structure.

29. (Previously Presented) The apparatus of claim 21, wherein said housing is configured to receive an irradiated boiling water reactor nuclear fuel assembly.

30. (Currently Amended) The apparatus of claim 21, wherein said elongated housing further comprising comprises a reflector that comprises:

a circular cylindrical inner reflecting surface positioned around a periphery of said housing; and

a circular cylindrical outer reflecting surface positioned around a periphery of said circular cylindrical inner reflecting surface and forming a gap between said circular cylindrical inner reflecting surface and said circular cylindrical outer reflecting surface.

31. (Previously Presented) An apparatus for cleaning an irradiated nuclear fuel assembly, comprising:

an elongated housing; and

a plurality of ultrasonic transducers positioned on said elongated housing, each comprising a rod configured to emanate omnidirectional ultrasonic energy waves having a node structure that is an approximate multiple of a spacing between the fuel rods of an irradiated nuclear fuel assembly to be received by said elongated housing.

32. (Previously Presented) The apparatus of claim 31, wherein said approximate multiple is one.

33. (Currently Amended) The apparatus of claim 31, wherein said elongated housing further comprising comprises a reflector that comprises:

a cylindrical inner reflecting surface positioned around a periphery of said elongated housing; and

a cylindrical outer reflecting surface positioned around a periphery of said cylindrical inner reflecting surface and forming an air gap between said cylindrical inner reflecting surface and said cylindrical outer reflecting surface.

34. (Currently Amended) An apparatus for cleaning an irradiated nuclear fuel assembly, comprising:

an elongated housing;

at least four pluralities of ultrasonic transducers, wherein each of said ultrasonic transducers comprises a rod configured to emanate omnidirectional ultrasonic energy waves and wherein each one of said at least four pluralities of ultrasonic transducers is positioned on said elongated housing such that each one of said at least four pluralities of ultrasonic transducers is adjacent to a different one of four sides of an irradiated nuclear fuel assembly to be received by said elongated housing; and

wherein said elongated housing comprises a reflector comprising a circular cylindrical inner reflecting surface positioned around a periphery of said elongated housing; and a circular cylindrical outer reflecting surface positioned around a periphery of said circular cylindrical inner reflecting surface and forming an air gap between said circular cylindrical inner reflecting surface and said circular cylindrical outer reflecting surface.

35. (Currently Amended) The apparatus of claim 34, wherein said elongated housing extends in a predetermined longitudinal direction and wherein each of said rods is positioned substantially parallel to said predetermined longitudinal direction.

36. (Canceled)

37. (Previously Presented) An apparatus for cleaning an irradiated nuclear fuel assembly, comprising:

a housing having an opening at a first end and a length; and

a plurality of ultrasonic transducers positioned on said housing, each comprising a rod,

wherein said opening is configured to receive, said length is configured to be at least as long as, and said rod of each of said ultrasonic transducers is configured to emanate omnidirectional ultrasonic energy waves having a node structure that is an approximate multiple of a spacing between the fuel rods of, an irradiated nuclear fuel assembly to be received by said housing.

38. (Currently Amended) The apparatus of claim 37, wherein said plurality of ultrasonic transducers is positioned ~~axially~~ along an ~~entire~~ entirety of said length of said housing.

39. (Previously Presented) The apparatus of claim 37, wherein said approximate multiple is one.

40. (Currently Amended) The apparatus of claim 37, wherein said housing further comprising a reflector that comprises:

a circular cylindrical inner reflecting surface positioned around a periphery of said stationary housing; and

a circular cylindrical outer reflecting surface positioned around a periphery of said inner reflecting surface, in which an air gap is positioned between said inner reflecting surface and said outer reflecting surface.